

**REMARKS**

In the Office Action dated April 22, 2008, claims 1-8 are pending and claims 1-8 are rejected. Applicants request reconsideration at least for the reasons discussed hereinbelow.

Copies of Reference BA, filed October 4, 2007 and June 6, 2008 and References BC and BD, filed February 24, 2005, cited in Applicant's IDS, are being resubmitted herewith.

Objection is made to the specification because it refers to Table 1 and Table 2, which are not included. Tables 1 and 2 were unintentionally omitted from the translation of the International application. The above amendment corrects this oversight. No new matter is added.

The claims are amended to more particularly point out and distinctly claim the subject matter regarded as invention. Support for new claim 9 can be found at least in the description at page 23 of the specification. Support for new claim 10 can be found at least in the description at page 30 and in Fig. 14. New claim 11 is based on original claim 4 as amended (see, for example, Figs. 1(b), 7(a), 14, and 17(a) and corresponding descriptions).

Claim 1 is rejected under 35 U.S.C. §102(e) over Furusawa (US 2002/0151161). First, Applicant notes that Furusawa corresponds to JP-2002-164635 (Ref. BE), which was cited in the IDS filed by Applicant on February 25, 2005.

Furusawa discloses a method for providing lyophilic and lyophobic regions on a substrate using a self-organizing film that is irradiated and followed by removal of portions of the film to expose lyophilic regions (see, e.g., col. 6, lines 43-49). When particle solution droplets are applied to the pattern, the droplets preferentially spread in the lyophilic

regions. However, there is no control of the spreading of the droplets. The spreading can flow in any direction of the lyophilic region. There is no teaching or suggestion in Furusawa for the lyophobic region to be structured to provide flow of the droplet in a predetermined direction in the lyophilic region.

The object of Furusawa is to provide a method for forming a high quality conductive film pattern having an accuracy on the order of microns by simple steps (see abstract). According to the disclosure of abstract and claims of Furusawa as well as FIG. 3, the pattern formation substrate Furusawa includes a lyophilic region and a lyophobic region, and all of droplets coming out of the lyophobic region moves to the lyophilic region (see col. 11, lines 12-33).

However, the object of present application is to provide a pattern formation substrate and a pattern formation method for forming the wiring pattern with the desirable characteristics so as to prevent the droplets from adhering to the droplet-free regions, which is very different from that of Furusawa.

As disclosed in the present specification, the hydrophilic line 6 has two or three different widths or two or three different contact angles (see Figs. 1 (b), 11-13, pages 16 and 27), which may form a pattern wiring with different shapes of hydrophilic line.

Moreover, as disclosed in the 'embodiment 2' of the present specification, a pattern formation substrate includes a hydrophilic line 6a (second region) in which the contact angle with respect to the droplet is a second contact angle, and a hydrophilic line 6b (third region ) in which contact angle with respect to the droplet, i.e., a third contact angle, is larger than the second contact angle (see Fig. 14, page 30), the applicants wish to add a new independent claim 10 corresponding to embodiment 2.

Thus, in accord with the present invention, a first region has a hydrophilicity that is less than that of a second region that is adjacent to the first region. In other words, a first region (e.g., lyophilic) having a first contact angle is provided and a second region (e.g., lyophobic) having a second contact angle is provided, wherein the second contact angle is smaller than the first contact angle. Further, the surface of the second region is structured and treated so that the droplet moves in a predetermined direction in the second region, i.e., the droplet does not flow in merely any direction where there is a lyophilic surface. The specification describes two embodiments for providing the predetermined direction. In one embodiment, the width L of the first region varies, thereby causing the droplet to move in a direction of expanding width. In another embodiment, the second region has two portions, each with a contact angle smaller than that of the first region, but the contact angles being different from each other. The different contact angles of the two portions cause a droplet initially overlapping the two portions of the second region and the first region to flow into the first region. This prevents the droplet from staying in the second region, which would provide an undesirable property.

Further, the present invention preferably provides the lyophilic and lyophobic regions on the substrate surface without removing portions of a film as described by Furusawa. Instead, the surface treatment can be accomplished by irradiation alone without removal of a film, which can increase process efficiency.

Thus, it is not seen how the present invention is anticipated by Furusawa.

Claims 2-8 are rejected under 35 U.S.C. §103(a) over Furusawa. The Examiner alleges that the claims read on prior art substrates on which a pattern is formed. However, the claims require particular contact angles and line widths that are structural features of the claimed pattern formation substrate. These contact angles and line widths are not taught or suggested by the prior art. The present invention enables the production of high quality circuit components more efficiently using the ink jet method. Using prior art

substrates and methods, ink droplets were more likely to stay in desired ink-free regions (regions of “non-wettability”), causing degradation of quality. Treating the second region so that the droplet moves in a predetermined direction in the second region provides improvement in efficiency and quality of the pattern formation substrate.

Applicants respectfully disagree that claims 2-8 are essentially product by process claims. The recitations in claims 2 and 3 are properties of the product and claims 4-8 are method claims.

Thus, it is not seen how the present invention would have been obvious to one of ordinary skill in the art in view of Furusawa.

Claims 1-8 are rejected on the ground of non-statutory obviousness-type double patenting over claims 1-3 and 6-10 of U.S. Patent No. 7,119,026. Applicants enclose herewith a terminal disclaimer to overcome this non-statutory obviousness-type double patenting rejection.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

If for any reason a fee is required, a fee paid is inadequate or credit is owed for any excess fee paid, the Commissioner is hereby authorized and requested to charge Deposit Account No. **04-1105**.

Dated:

*18 July '08*

Respectfully submitted,

By   
George W. Neuner

Registration No.: 26,964  
EDWARDS ANGELL PALMER & DODGE  
LLP  
P.O. Box 55874  
Boston, Massachusetts 02205  
(617) 517-5538  
Attorneys/Agents For Applicant

BOS2 672620.1